

Nokia Response to Commission Request for Supplemental Information

GN Docket No. 15-319

March 14, 2018

1. Please explain in detail how Nokia will facilitate coordination for GAA users operating Category B CBSDs. (p. 9) (96.53(j))

Nokia will facilitate coordination for GAA users operating Category B CBSDs using the industry consensus approach standardized in WinnForum, specifically Requirements for Commercial Operation in the U.S. 3550-3700 MHz Citizens Broadband Radio Service Band Working Document WINNF-TS-0112”, Version V1.4.1, 16 January 2018 (<http://bit.ly/CBRSoPReq>).

2. How will Nokia make all information necessary to effectively coordinate operations between and among CBSDs available to other SAS Administrators? Please expand the description provided. (p.5) (96.5 5(a)(2))

Nokia will support the WinnForum SAS-SAS protocol standard, specifically Signaling Protocols and Procedures for Citizens Broadband Radio Service (CBRS): Spectrum Access System (SAS) - SAS Interface Technical Specification Document WINNF-TS-0096, Version 1.2.0, 20 October 2017 (<https://workspace.winnforum.org/higherlogic/ws/public/download/4813/WINNF-TS-0096-V1.2.0%20SAS-SAS%20Protocol%20Technical%20Specification.pdf>) (and its future revisions (if any)) to effectively coordinate operations between and among CBSDs available to other SAS Administrators.

3. Please affirm that in response to a request from the Commission, Nokia will confirm that CBSDs in a given geographic area and frequency band have been shut down or moved to another available frequency range in response to information received from the ESC. (96.59(a)(2))

Nokia affirms that it will fully comply with the rule 96.59(a)(2). Specifically, in response to a request from the Commission, Nokia will confirm that CBSDs in a given geographic area and frequency band have been shut down or moved to another available frequency range in response to information received from the ESC.

4. Please acknowledge that Nokia may temporarily assign PALs to different channels (within the frequency range authorized for Priority Access use) to protect Incumbent Access Users or if necessary to perform its required functions. (96.59(c))

Nokia acknowledges that its SAS will fully comply with (96.59(c)). Specifically, the Nokia SAS may temporarily assign PALs to different channels (within the frequency range authorized for PAL use) to protect Incumbent Access Users or if necessary to perform its required functions.

5. Describe in detail the communication security, integrity, privacy protocols, and procedures that will be used by Nokia. The protocols and procedures must be sufficient to ensure that all communications and interactions between the SAS, ESC, and CBSDs are accurate and secure and that unauthorized parties cannot access or alter the SAS or the information transmitted from the SAS to the CBSDs. (p. 9) (96.63(d))

The Nokia SAS will fully comply with Section 96.63(d) of the Commission's rules by implementing WInnForum standards defined for operational and communication security, which will ensure that all communications and interactions between the SAS, ESC, and CBSDs are accurate and secure and that unauthorized parties cannot access or alter the SAS or the information transmitted from the SAS to the CBSDs.

Specifically, the Nokia SAS will implement communication security, integrity, privacy protocols, and procedures, supporting security of SAS-SAS, SAS-DP and SAS-CBSD interactions, by fully implementing current and any future versions of WINNF-TS-0071-V1.0.0 CBRS Operational Security Technical Specification (<http://bit.ly/CBRSOpSec>) and WINNF-TS-0065-V1.1.0 CBRS

Communications Security Technical Specification (<http://bit.ly/CBRSComSec>) which leverage the WINNF-TS-0022-V1.1.2 CBRS PKI Certificate Policy (<http://bit.ly/CBRSPKICert>).

The WINNF Communications Security spec WINNF-TS-0065-V1.1.0 currently does not define how to secure (i.e., protect Confidentiality, Integrity and Availability of) the SAS to ESC interface or communications channel. Therefore, in conformance with current industry security best practices, Nokia intends to employ IPSEC VPNs to secure the communication between the SAS and ESC. The SAS-ESC interface could also be secured through TLS1.2. Nokia is also committed to fully supporting any future WlnnForum standards on communication security of the SAS-ESC Interface.

6. Please affirm that Nokia will securely transfer the information in the SAS, along with the IP addresses and URLs used to access the system, and a list of registered CBSDs, to another approved entity in the event it does not continue as the SAS administrator at the end of its term. (96.63(g))

Nokia affirms that in conformance with the Section 96.63(g) of the Commission's rules, Nokia will securely transfer the information in its SAS, along with the IP addresses and URLs used to access the system, and a list of registered CBSDs, to another approved entity in the event it does not continue as the SAS administrator at the end of its term.

7. Describe in detail the standard process Nokia will use for coordinating operations with other SASs, avoiding conflicting assignments, maximizing shared use of available frequencies, ensuring continuity of service to all registered CBSDs, and providing data collected pursuant to the law. (96.63(h))

The Nokia SAS will comply with Section 96.63(h) of the Commission's rules by supporting the WlnnForum mandated processes for coordinating operations with other SASs, avoiding conflicting assignments, maximizing shared use of available frequencies, ensuring continuity of service to all registered CBSDs, and providing data collected pursuant to the law. It will fully

support the Inter-SAS Communication Requirements mandated in the WInnForum standard WINNF-TS-0112-V1.4.1 CBRS Operational and Functional Requirements (<http://bit.ly/CBRSSOpReq>).

8. Please provide details regarding PAL leasing. For example, please specify what process will be in place to:
 - a. Acquire and store the lease notification information; (p. 1 1-12) (96.66(a)(2))
 - b. Verify that the lease will not result in the lessee holding more than the 40 megahertz of Priority Access spectrum in a given License Area; (96.66(a)(3))
 - c. Provide confirmation to licensee and lessee whether the notification has been received and verified. (96.66(a)(5))
 - d. Maintain records not pertaining to federal Incumbent User transmissions for at least 60 months. (96.55(b))

Nokia affirms that its SAS will meet the requirements of Sections 96.66(a)(2), (3), and (5) by supporting the WInnForum standard WINNF-TS-0112-V1.4.1 CBRS Operational and Functional Requirements (<http://bit.ly/CBRSSOpReq>). More specifically, SAS requirements RO-PAL-01, RO-PAL-02 are aimed at meeting Section 96.66. Nokia also affirms that its SAS will maintain records not pertaining to federal Incumbent User transmissions for at least 60 months in conformance with Section 96.55(b) of the Commission's rules.

9. Please affirm that during the period of a PAL lease, and within the geographic area of a lease, Nokia will treat any CBSD operated by the lessee the same as a similarly situated CBSD operated by the lessor for frequency assignment and interference mitigation purposes. (96.66(b))

Nokia affirms that it will comply with Section 96.66(b) of the Commission's rules. Specifically, during the period of a PAL lease, and within the geographic area of a lease, Nokia SAS will treat any CBSD operated by the lessee the same as a similarly situated CBSD operated by the lessor for frequency assignment and interference mitigation purposes.

10. Please affirm that the Nokia SAS will allow CBSDs to operate within areas that may cause interference to FSS earth stations, in excess of the levels described in § 96.17(a) and (b), provided that the licensee of the FSS earth station and the authorized user of the CBSD mutually agree on such operation and the terms of any such agreement are provided to Nokia. (96.17(e))

Nokia affirms that it will comply with Section 96.17(e) of the Commission's rules. Specifically, the Nokia SAS will allow CBSDs to operate within areas that may cause interference to FSS earth stations, in excess of the levels described in § 96.17(a) and (b), provided that the licensee of the FSS earth station and the authorized user of the CBSD mutually agree on such operation and the terms of any such agreement are provided to Nokia.